

APPENDIX A

2000 Digital Implementation Survey

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Executive Summary

A faxed questionnaire was sent to all commercial television stations asking whether they were experiencing problems with their DTV transition. Responses representing 38% of commercial television stations were received. Some of the results include:

- Nearly four-tenths of all responding stations have experienced some sort of government delay, either with local zoning approval, environmental agency approval, FAA approval or with FCC DTV application processing.
- Twenty-eight percent of major affiliates in markets 1-30 experienced local zoning or other approval problems and delays when siting a new tower or mounting a new antenna for a DTV signal. The most commonly cited example included problems with zoning/planning boards and government agency delays.
- The average (mean) delay for all stations who have experienced or currently are experiencing zoning or approval is 11 months. For those stations currently broadcasting in DTV that experienced those problems, the mean delay was longer -- 20 months.
- While a majority of respondents reported that they have not experienced any troubles arranging crews to install a new DTV antenna or tower, almost one-sixth (15.6%) of stations currently broadcasting in DTV stated they have experienced problems arranging crews. This percentage could increase as more stations convert to DTV.
- Slightly more than one-quarter (26.6%) of stations currently broadcasting in DTV stated they have experienced delays in acquiring the necessary equipment from vendors. The most frequently cited reasons for acquisition problems (for all respondents) included manufacturer delays, vendors/consultants being unavailable and over-extended, as well as the high costs associated with the equipment.
- More than one-quarter (27.8%) of all respondents stated they had experienced delays in DTV application processing at the FCC. The most common FCC problems included maximization issues, channel change issues and delays in receiving construction permits.

Introduction

Overview

The following report presents the results of a recent survey concerning the status of digital television facilities. A brief one-page facsimile survey (see Attachment 1) was sent to the attention of Chief Engineers at all 1,113 commercial television stations with known fax numbers.

Methodology

The surveys were faxed on April 24, 2000. A "second request" fax was sent one week after the initial deadline to chief engineers. NAB received completed surveys representing 424 stations, yielding a response rate of 38.1%. The distribution of the markets sizes of the responses very closely matches the distribution of market sizes of the original sample (see Attachment 2).

In addition to examining the completed surveys for all of the responding stations, NAB also analyzed the results for different key groups. One group includes the major affiliates in the top 30 markets (plus KTLA in Los Angeles) who were required to be on-air by November 1999. We received responses representing 50 of those 121 stations resulting in a response rate of 41.3% for that group.

Another key group examined includes those stations that are presently broadcasting a DTV signal. At the time of the survey, we identified 109 commercial television stations in all sized markets that were broadcasting a DTV signal. We received responses representing 45 of those stations resulting in a 41.2% response rate.

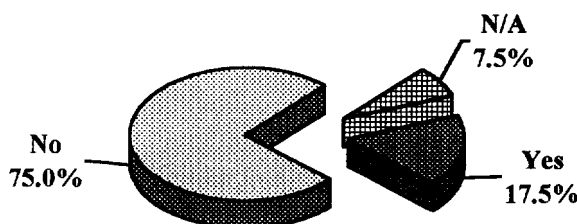
Because this is an attempted census, there is no way to estimate sampling error. More than one-third (38.1%) of the chief engineers at commercial television stations participated in the survey (total); there may be differences with the remaining two-thirds (61.9%) who did not respond.

Primary Findings

Trouble with local zoning or other approvals

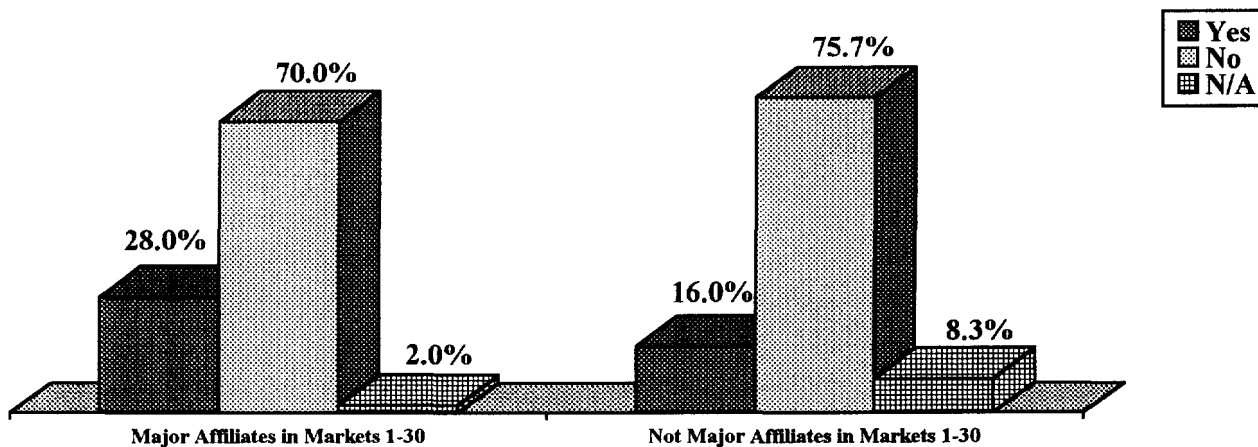
When asked whether they had any trouble with local zoning or other approvals in siting a new tower or mounting a new antenna for the DTV signal, **over one-sixth (17.5%) of all respondents stated they did.**

**Figure 1: Trouble with Local Zoning/Approvals
(all stations)**



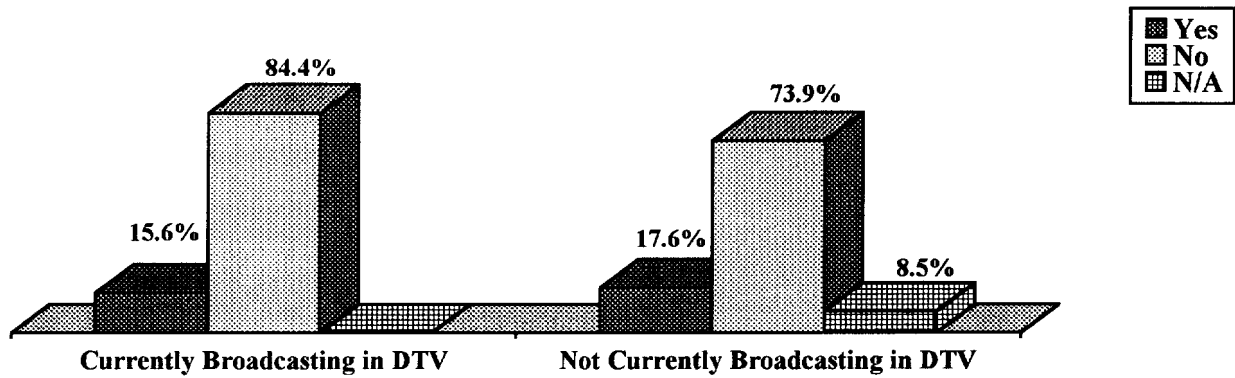
When respondents are broken-down into key groups, **more than 25% of all major affiliates in markets 1-30 stated they had trouble with local zoning and/or other approvals in siting a new tower or antenna for the DTV signal.** For the remaining responding stations (not a major affiliate in markets 1-30), only 16% reported that they had experienced zoning/approval problems, while three-quarters did not.

**Figure 2: Experienced Zoning/Approval Problems
Major Affiliates by Market**



Slightly less than one-in-five stations that are currently broadcasting in DTV (as of April 2000) and those that are not currently broadcasting a DTV signal reported they experienced problems with local zoning and/or other approvals in siting a new tower or mounting a new antenna.

Figure 3: Experienced Zoning/Approval Problems for Stations Currently Broadcasting in DTV



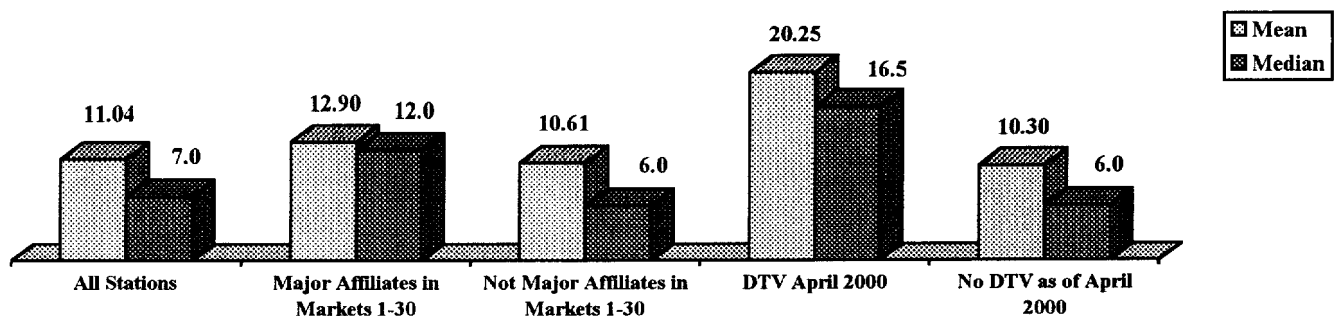
When asked to describe how the nature of the local zoning or other approvals that affected the siting of a new tower or new antenna, station comments can be summarized as follows:

- Zoning/Planning Board Issues (n = 27)
- Government Agency Issues (n = 17)
- Residential Complaints- "Not in my backyard" (n = 10)
- Need new tower/tower space issues (n = 10)
- Environmental Concerns (n = 9)

How Long Zoning/Approval Trouble(s) Delayed Construction

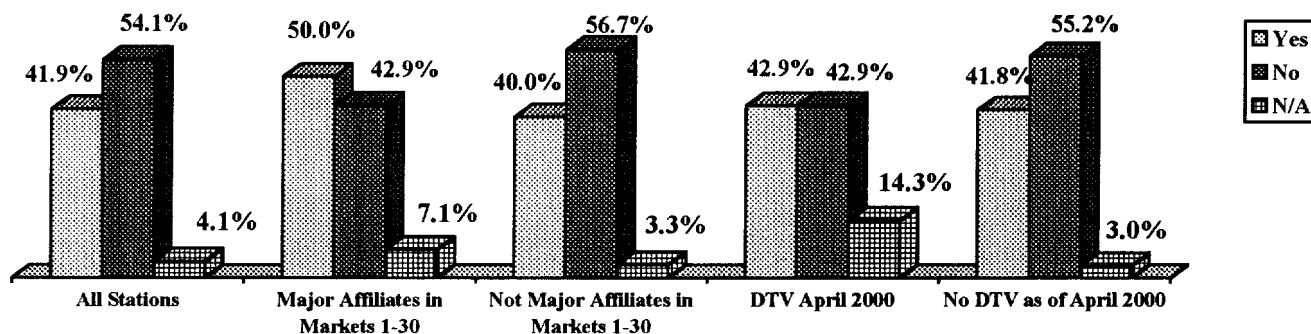
When asked how long (in terms of months) zoning and approval troubles have delayed the construction of a new tower or antenna for the DTV signal, the **mean delay for all responding stations who experienced some trouble was 11.04 months**. The median was seven months. Major affiliates in markets 1-30 reported that the mean delay due to local zoning or other approval troubles was almost 13 months; those stations that are not major affiliates in markets 1-30 reported mean delays of almost 11 months.

Figure 4: Delay in Construction Due to Zoning or Approval Troubles (in months)



Notably, of those stations that reported having zoning/approval matters related to siting a new tower or mounting a new antenna, **over half (54.1%) of all responding stations for all stations reported that their zoning/approval matters have not been resolved**, whereas four-in-ten (41.9%) reported that their troubles have been resolved.

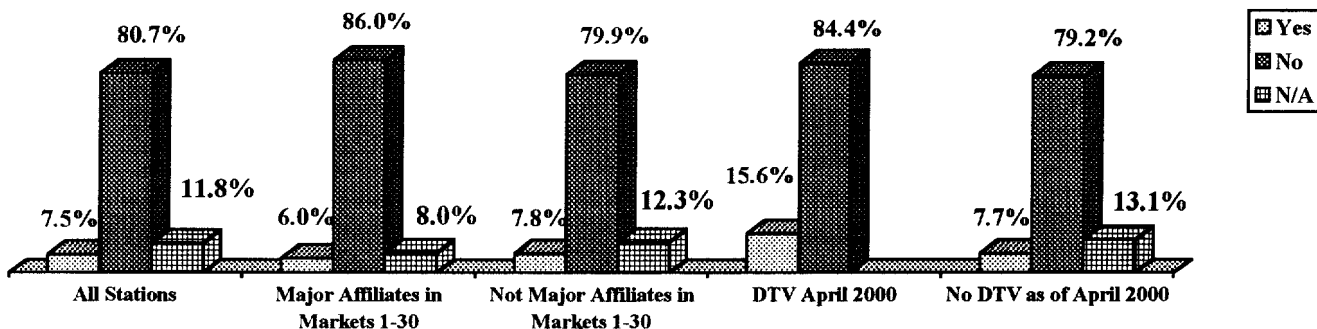
Figure 5: Has the Zoning/Approval Trouble(s) Been Resolved?



Trouble Arranging Tower Crews

Respondents were asked whether their station had any trouble(s) arranging tower crews to install a new DTV antenna and/or tower. The **majority of respondents stated they did not have trouble arranging tower crews**. Fifteen percent of respondents representing stations that currently broadcast in DTV stated that they had trouble arranging tower crews to install their station's DTV antenna and/or tower.

Figure 6: Trouble Arranging Tower Crews to Install DTV Antenna or Tower



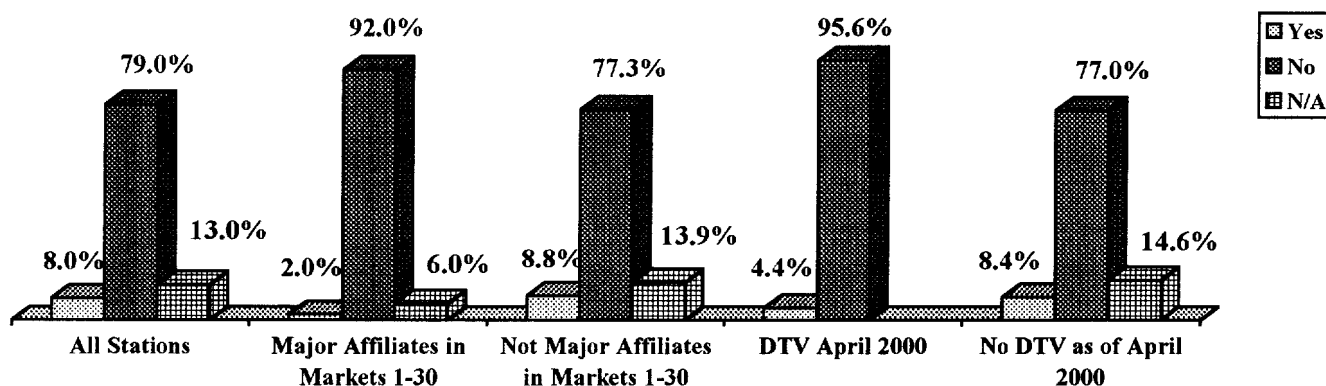
When asked to describe what trouble they experienced in arranging tower crews to install a DTV antenna or tower, station comments can be described as follows:

- Shortage of crews (n = 19)
- Crews are often overextended and are behind schedule (n = 5)
- Station has not yet scheduled a crew (n = 3)

Difficulties Securing Capital Financing for DTV Station Construction

A majority of stations (three-quarters or more) reported that they **did not have difficulties in securing the necessary capital financing** for their station's DTV station construction.

Figure 7: Difficulties Securing Capital Financing



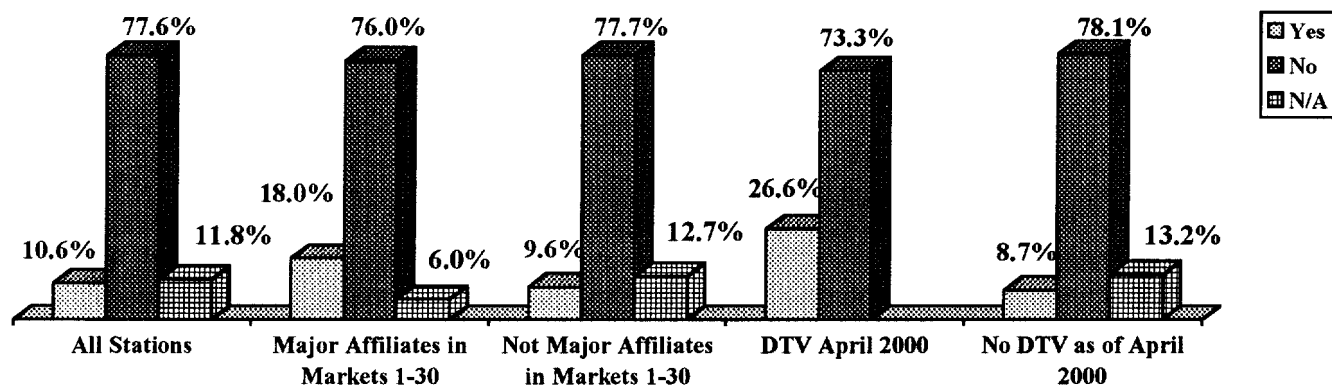
When asked to describe the nature of the difficulties in securing the necessary capital financing for their DTV station construction, station comments can be summarized as follows:

- Hard to justify/a large amount of money for the market (n = 7)
- Delays from corporate office (n=6)
- Transition/ownership issues (n=3)
- Banks not interested in lending (n=1)

Delays in Acquiring Necessary Equipment

Respondents were asked whether they experienced any delays in acquiring the necessary DTV equipment from vendors. Slightly **more than one-quarter (26.6%) of respondents from stations currently broadcasting in DTV have experienced delays** in acquiring the necessary equipment from vendors.

**Figure 8: Delays in Acquiring Necessary Equipment
From Vendors for DTV Facilities**



It is interesting to note that stations leading in the transition process (major affiliates in markets 1-30 and those currently on-air with their DTV signal) indicated a greater likelihood to have experienced delays.

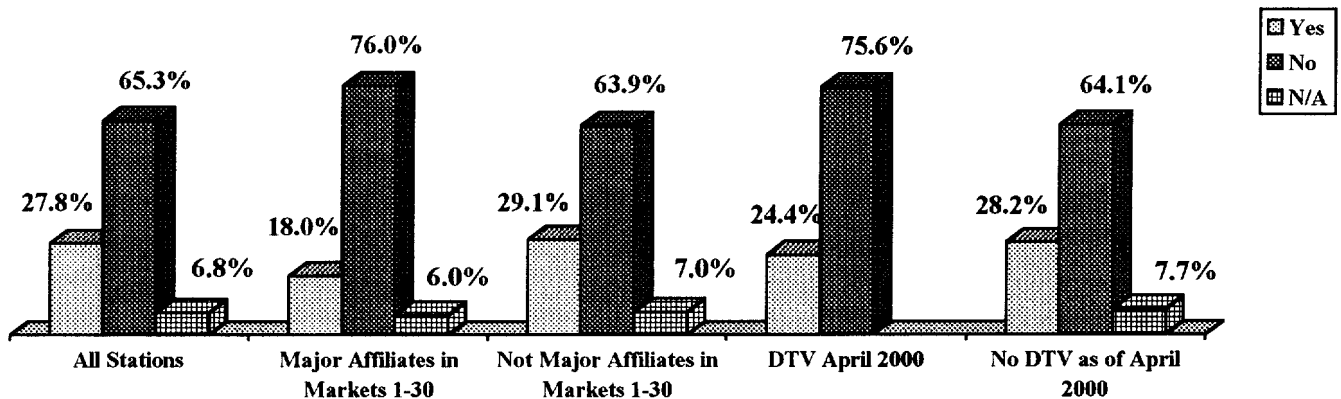
When asked to describe the delays in acquiring the necessary equipment from vendors for DTV facilities, their comments can be described as follows:

- Delay in receiving equipment/manufacturer backlog (n = 22)
- Vendors/consultants too busy (n = 11)
- High costs (n = 10)
- Lack of necessary test equipment (n = 8)

Delays with DTV Application Processing at the FCC

Slightly more than **one-quarter (27.8%)** of all respondents stated they had experienced some **trouble and/or delay with DTV application processing at the FCC**. For those respondents who do not represent major affiliates in the top 30 markets, almost one-third (29.1%) experienced trouble or delay with DTV application processing at the FCC.

Figure 9: Trouble/Delay with DTV Application Processing at the FCC



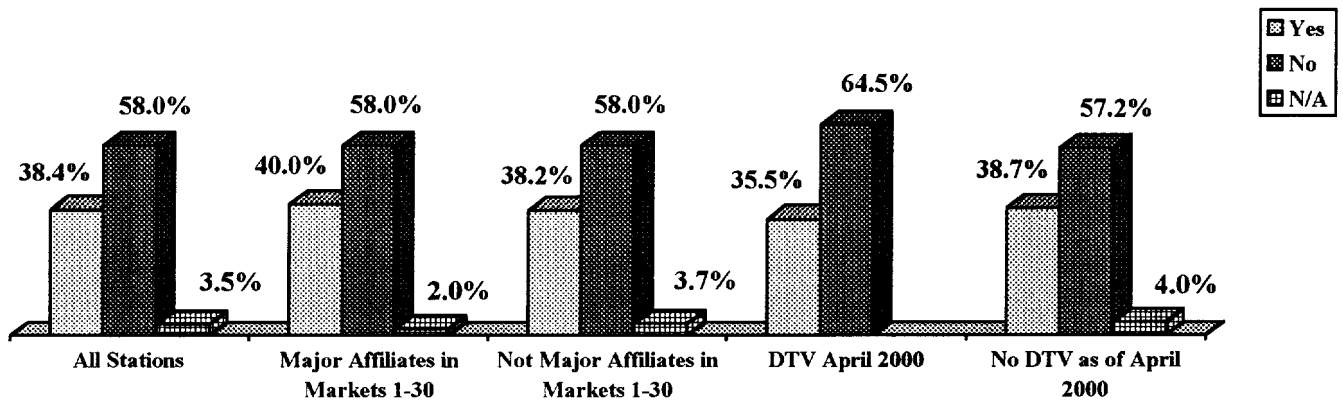
When asked to describe the FCC delays in processing DTV applications, station comments can be summarized as follows:

- Maximization issues (n = 32)
- Problems associated with channel changes (n = 31)
- Construction permit issues (n = 26)
- Canadian border issues (n = 5)
- Power increase requests (n = 5)
- FCC database problems (n = 2)

Government Delays

Between local zoning or other approvals, FAA and environmental approvals, or the FCC-DTV application processing, **nearly four-in-ten (38.4%) stations have experienced some delays.** No noticeable differences were noticed for the different groups of stations.

Figure 10: Government Delays for DTV Implementation



Conclusion

While most television stations are progressing with their transition to digital television, some stations are facing problems, most noticeably government (either local and/or federal) delays in the application approval and/or permitting process. In addition, some stations are experiencing difficulty in obtaining the necessary equipment, crews to install their new antenna and/or tower, and capital funding for this major investment. Overall, 200 stations (47%) reported experiencing one or more delays transitioning to DTV.

ATTACHMENT 1

ATTENTION CHIEF ENGINEER: WE NEED YOUR HELP!



Survey of DTV Implementation April - May 2000

NAB needs your input on any problems or concerns affecting your planning for and constructing new digital television facilities. Please take a few moments to answer all of the questions below as completely as possible. **Individual responses will be kept strictly confidential.** We need this information to tell the FCC about industry problems when we file comments on May 17th. Only aggregate information will be in the report. If you have any questions, please call Chris Ely of NAB's Research and Planning Department at (202) 429-5390.

**Please fax your response back to (202) 775-2980 or (202) 775-4981
no later than Monday May 1, 2000.**

In case we need to verify any information, please print the information requested below. Your responses will be kept strictly confidential.

Name: _____ Phone: _____

Calls: _____ E-mail: _____

1. Have you had any trouble with local zoning or other approvals in siting a new tower or mounting a new antenna for your DTV signal? ☐ Yes ☐ No

1a. If "yes," what is the nature of this trouble? _____

1b. In terms of months how long has this trouble delayed your construction?

1c. Has this matter been resolved? ☐ Yes ☐ No

2. Have you had any trouble arranging tower crews to install your new DTV antenna and/or tower? ... ☐ Yes ☐ No

2a. If "yes", please explain _____

3. Have you had any difficulties in securing necessary capital financing for your DTV station construction? ☐ Yes ☐ No

3a. If "yes", please explain _____

4. Have you had any delays in acquiring the necessary equipment from vendors for your DTV facilities? ☐ Yes ☐ No

4a. If "yes", please explain _____

5. Have you had any trouble or delay with DTV application processing at the FCC? ☐ Yes ☐ No

5a. If "yes", please explain _____

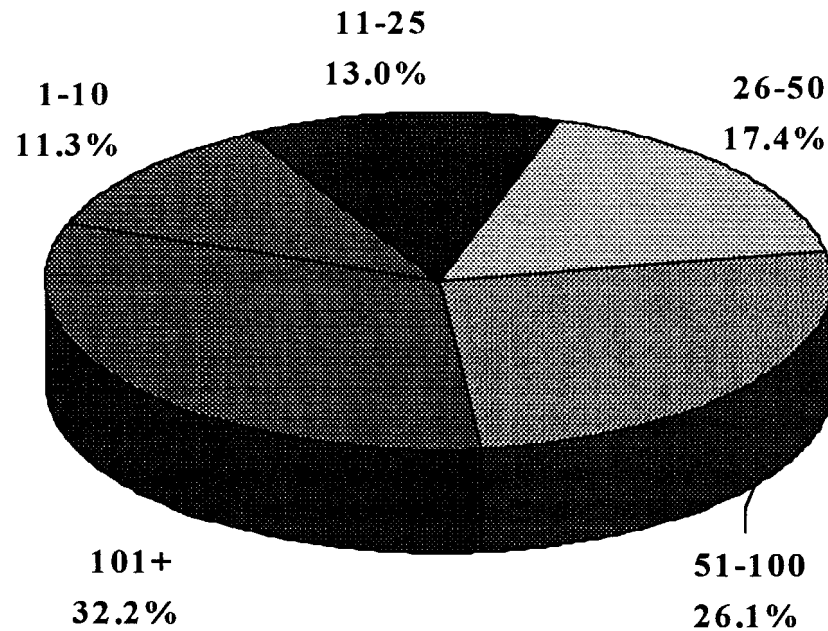
6. Are there any other problems you are facing in your DTV station construction and operation? _____

**Please complete and return by May 1, 2000
to (202) 775-2980 or (202) 775-4981**

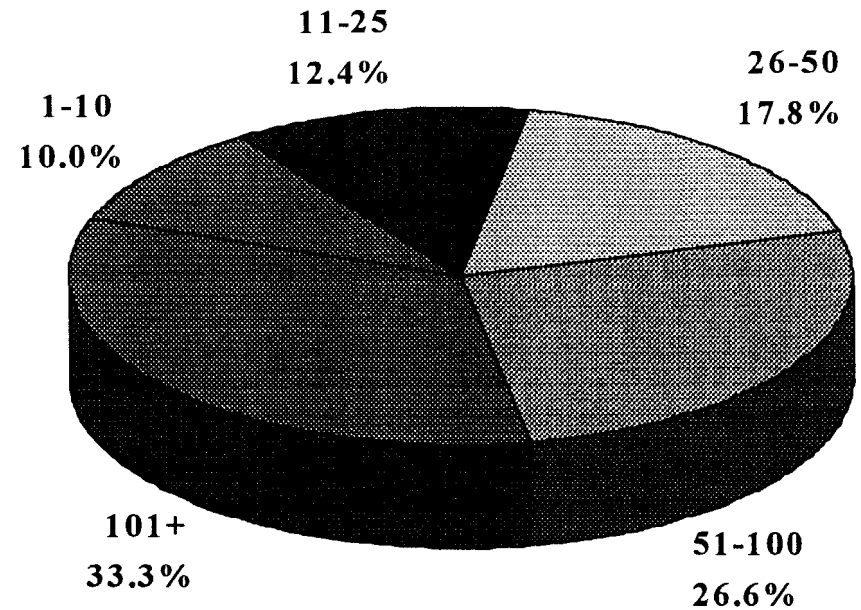
ATTACHMENT 2

Distribution of Television Stations by Market Size - Original Sample & Respondents - DTV Implementation Survey

Original Sample



Respondents



APPENDIX B

Additional Needed Technical Rules

Because the FCC technical rules on DTV transmission are based on industry technical standards, the FCC must keep pace with changes and modifications to those industry technical standards and/or evaluate if new industry standards should be incorporated in to the FCC rules. Over the past three years, the industry standards developing organizations have corrected errors and developed improvements in their standards to better provide DTV services to the public. These changes must be adopted by the FCC to avoid a television station being in technical violation of the FCC rules, as the equipment must be built according to the current standard so that it actually works.

Additional capabilities that provide better DTV services to the public have been developed by the ATSC and CEA and take the form of new standards. While most of the elements of these voluntary industry standards do not require Commission mandates, a few narrow elements directly bear upon the public interest and are critical to facilitation of the DTV transition. The FCC needs to act to protect consumers from certain data collisions, a new form of interference that has begun to occur among received DTV signals.

There is also one restriction in the audio compression standard referenced in the current FCC rules which the industry is in the process of modifying as part of the due process of modification of a standard. The Commission should be prepared to act if and when this standard is modified by ATSC.

Each of the above will be covered in the sections on Base Standards, New Standards, and Maximum Audio Bit Rate below.

Base Standards

The base standards for DTV as adopted by the FCC include the MPEG-2 standards, which are normatively referenced in Section 2 of ATSC A/53. Specifically, the referenced MPEG-2 standards are ISO/IEC 13818-1, International Standard (1994), MPEG-2 Systems and ISO/IEC 13818-2, International Standard (1994), MPEG-2 Video. Since the Final Reconsideration of the 5th and 6th Report & Orders in Docket 87-268, a number of corrigenda and amendments to ISO/IEC 13181-1 and 13818-2 have been completed and formally adopted in the international standards setting process. The corrigenda and amendments either fix errors or change functionality. Therefore, the version of the DTV standards currently in the FCC rules (by reference in A/53) differ from the version of standards that are internationally approved as valid. The ATSC has examined the appropriateness of adopting these changes and formally approved an update to A/53 to reflect those deemed appropriate. Further, the language in A/53 suggesting that the program paradigm preferred has been removed, clarifying that the program paradigm is no longer required. NAB supports the updating of the Commission's rules to require compliance with the updated version of A/53 as approved by ATSC, which is available from <http://www.atsc.org>.

New Standards

There was no industry agreement on the method to communicate what programs were being broadcast on a DTV channel at the time the FCC adopted A/53. Since then, an effort was undertaken to address a consumer-friendly, standard way to uniquely identify DTV stations and programs, while providing a standard method for receivers to access this information. This activity led to ATSC's approval of ATSC Standard A/65 *"Program and System Information Protocol for Terrestrial Broadcast and Cable"* (PSIP) on December 22, 1997. Subsequently, a corrigendum¹ and an amendment¹ have been approved by the ATSC, resulting in A/65A, dated 29 March 29, 2000.

¹ ATSC uses the methodology of corrigenda to fix editorial errors or provide needed clarification and amendments to change technical content. The detailed ATSC definitions for corrigenda and amendment are in ATSC document E11.

While it would be helpful and less complex for the FCC to adopt this standard (A/65A) to accelerate acceptance of a uniform approach by all stations, there are a few essential elements of A/65A whose impact is so substantive that codification or selected reference by the FCC is essential to rapid acceptance of DTV by consumers, to avoid negative impacts and to gain positive benefits for the public welfare. These elements, detailed below, are the assignment of major channel numbers, the assignment of unique identifiers for each broadcaster, the method of carriage of parental advisory information about individual programs and descriptive information to facilitate a rich set of advanced caption services.

Program and System Information Protocol (PSIP) Channel Number

A consistent, familiar method to select a TV program for those with a DTV receiver was developed by the ATSC as a part of the PSIP standard (A/65). The PSIP standard contains a structure for the placement of a channel number and a programming service number. These are called major and minor channel numbers. For broadcasters with existing NTSC licenses, the voluntary standard requires that the major channel number be the same as their current NTSC channel number. For new broadcasters without existing NTSC licenses, the standard requires that the station's DTV RF channel number be the major channel number. Accordingly, this standard assigns major channel numbers between 2 and 69 to all digital television stations in a manner that guarantees no duplication within a market.² This allows existing NTSC licensees to retain their present channel number and this will also facilitate consumer understanding that the new DTV service is being provided by the current NTSC service provider.

However, there is no FCC rule that would prevent a station from intruding on the identity of another station's DTV channel number or expropriating any other number. As an example, in Washington, DC, a station could pick a major channel value of "8" thinking that most viewers cannot get that channel in the DC DMA. But, some viewers in the DMA may be

² This is an automatic by-product of the FCC allocation process which requires channels be separate in space or frequency or both.

able to get WGAL from Lancaster, PA, WWCP from Johnstown, PA or WRIC from Petersburg, VA. Such consumers with DTV sets may no longer be able to tune to the NTSC channel “8” (of the ones who can receive both the NTSC channel 8’s and the DTV labeled “8”). This confusing and disruptive situation is easily avoided by only permitting licensees to use their FCC-assigned channel numbers for this PSIP parameter value.

NAB strongly urges that the FCC require that the major channel number identified in the PSIP protocol in the DTV signal be one of the RF channels that have been allocated to that broadcaster.³

Digital Broadcaster Identifier (TSID)

The ASTC standard A/65A includes reference to and adds linkages to an essential MPEG-2 parameter, the transport stream identifier or TSID. The FCC rules currently require the presence of this number in the field transport stream ID.⁴ However, no FCC rule or process exists to enable a broadcaster to determine how to fill this field or to avoid duplicate assignments. This is an important issue as duplicate TSID assignments can lead to digital interference resulting in the wrong broadcaster’s DTV program being selected by the receiver.

A DTV receiver that is presented with two digital signals having the same unique identifier at the same time cannot be expected to correctly select either. All MPEG-2 DTV signals require this field, so Canadian DTV stations will need TSIDs that do not collide with those from any U.S. stations. If Mexico chooses a DTV system based on MPEG-2⁵, it too will

³ Explicitly, this should also permit duopolies to label both controlled DTV streams with one of that duopolies’ channel numbers. In addition, translators should not be required to insert the actual RF channel number of the translator.

⁴ As ISO/IEC 18181-1(MPEG-2 Systems) is normative in A/53, and A/53 is incorporated into the FCC rules, the field transport_stream_id in table 2-25 of ISO/IEC 13818-1 is required to have a value. This field’s defined purpose is to serve as a label to distinguish among transport streams encountered by a receiving device.

⁵ Independent of RF modulation scheme selected.

have this coordination requirement. Also, cable systems need unique TSID values both within the system and compared to receivable broadcasts in their service area. TSID values for cable systems are not assigned nor coordinated at the present time and their plans are not known to us. Further, Class A TV and LPTV stations will need TSID assignments when they begin operating with DTV signals.

When a cable system carries DTV signals by combining two broadcast DTV signals on a higher capacity (256QAM) channel, the uniqueness of the broadcasters programs must be maintained. The TSID is the element that enables such combinations without loss of identity. ATSC's A/65A requires the TSID to be placed in two additional locations in the virtual channel table to facilitate retention of the DTV station identity when carried by a cable system also using a MPEG-2 transport, and establishes certain linkages to facilitate tuning and construction of program guides.

The A/65A standard does not assign the TSID values, but it does require that they be unique. The A/65A protocol is designed so that translators do not need a unique number, as they only re-distribute the DTV signal. Changing the TSID value when either redistribution occurs should not be permitted as that would lead to loss of station identity and may prevent a DTV receiver from providing a DTV program 'tuned' by a consumer.

Because the FCC had not decided to administer the values for this field at the time the first DTV stations went on the air, an industry group created a series of TSID numbers for use by terrestrial broadcasters in the United States. However, a broadcaster is not required to place the appropriate value in the appropriate places by any FCC rule, and because it was not required, some did not do so when they initially began to operate. This caused some receivers to fail to acquire stations and in some cases aborted their electronic program guide function or exhibited other anomalous behavior. This cannot have helped consumers to have confidence that DTV service was reliable. Although the industry effort dealt with the immediate crisis for early DTV terrestrial broadcasters, cable operators have not been a part of this process, nor does a private industry effort have any authority to coordinate

internationally. When as a part of the routine administration of the television licenses, any change to an allotted RF channel or an allotted NTSC channel, or assignment of a new DTV channel is made, the initial industry list will become (and may already be) inaccurate.

Absent FCC action, consumers could be faced with malfunctioning equipment.

While the additional capabilities in A/65A are expected to improve consumer friendliness and utility, they should not be confused with the fundamental need for uniqueness in this TSID which is driven by the nature of the MPEG-2 structure itself. TSID values for Canadian and Mexican stations would best be coordinated by the FCC. The effort to track all such changes both domestically and internationally can effectively only be done by the FCC. Accordingly, the FCC can and must assign these numbers or coordinate ranges to prevent interference in the digital signal domain, just as it must in the radio frequency domain.

Parental Content Advisory

The third issue is the carriage of parental content guidance information. The preferred location and structure are defined in A/65A and the content is defined in EIA 766.

Broadcasters should not be required to send any parental content advisory information, but when it is voluntarily added to the DTV transport stream there should be no uncertainty about use of A/65A's content advisory descriptor nor about where this should be placed.

The FCC should require the A/65A method of carriage of the content advisory descriptor as required in ATSC A/65A with program values as defined in EIA766.

Advanced Closed Captioning

The fourth issue is closed captioning information. While the captions themselves are carried in the video user bits (per A/53) with contents in accordance with EIA708⁶, when multiple caption services are present, the information needed for the consumer to select among them is carried in the caption service descriptor, the semantics of which are defined

⁶ Details subject to rulemaking in ET Docket 99-254.

in A/65A. Absent the ability to rely upon this data, deployment of advanced captioning can be expected to be impaired and only the minimum functionality to be available in receivers.

The FCC should require a consistent method to communicate to receivers what captions are present to complement and define both ends of the closed captioning sub-system. To fail to do so will hinder the deployment and usability of DTV captioning.

Maximum Audio Bit Rate

The currently authorized maximum data speed for an audio service is 384 kbps, a limit placed by A/53 constraining the maximum rate of 640 kbps available in A/52 (which documents the AC-3 audio compression system). There is a change in process within the ATSC to raise this audio data rate limit from 384 kbps to 448 kbps. This work is the result of deliberations in ATSC and CEA standards groups, and that value is believed to be supported by all receivers. The FCC should be prepared to adopt this change in maximum audio bit rate if and when the ATSC accommodates the change in its standard.